

Listing of the Claims:

1. (Previously presented) A lithium ion battery comprising:
a cathode;
an anode; and
an electrolyte layer between the cathode and the anode,
wherein the cathode, the anode, and the electrolyte layer constitute a cell element,
and
wherein the electrolyte layer consists essentially of a pattern of individual insulating particles with a plurality of interstitial spaces therebetween, with electrolytes occupying at least some of the interstitial spaces, wherein each individual insulating particle in the pattern is selectively arranged directly on one of the cathode and anode, the individual insulating particles arranged such that the cathode and the anode do not contact each other.
2. (Canceled).
3. (Previously presented) The battery according to claim 1, wherein a void ratio of the interstitial spaces to the individual insulating particles in the electrolyte layer is 50-90%.
4. (Previously presented) The battery according to claim 1, wherein a mean radius of the individual insulating particles is 0.05-10 μm .
5. (Previously presented) The battery according to claim 1, wherein a thickness of the electrolyte layer is 10 μm or less.
6. (Previously presented) The battery according to claim 1, wherein the electrolyte is a solid electrolyte.

7. (Previously presented) The battery according to claim 1, wherein the individual insulating particles comprise olefin resins.

8. (Previously presented) The battery according to claim 1, wherein the individual insulating particles are inorganic oxides.

9. (Previously presented) The battery according to claim 1, wherein the cathode comprises a cathode active material that is formed using lithium-transition metal composite oxides, and wherein the anode comprises an anode active material that is formed using carbon- or lithium-transition metal composite oxides.

10. (Previously presented) A method for manufacturing a battery comprising:
applying individual insulating particles directly to at least one of a cathode and an anode;

applying an electrolytic polymer to at least some of a plurality of interstitial spaces between the individually applied insulating particles to form an electrolyte layer; and

layering the cathode and the anode such that the electrolyte layer is formed in between.

11. (Previously presented) The method according to claim 10, wherein the electrolyte layer is formed by applying the individual insulating particles and the electrolytic polymer directly to at least one of the anode and the cathode through a nozzle of an ink-jet printer.

12. (Previously presented) The method according to claim 10, wherein the electrolytic polymer is applied simultaneously with the individual insulating particles to form a solid electrolyte battery.

13. (Previously presented) The method according to claim 10, wherein the individual insulating particles and electrolytic polymer are applied separately to form a solid electrolyte battery.

14. (Original) The method according to claim 10, wherein the thickness of the electrolyte layer is 10 μm or less.

15. (Previously presented) A battery assembly comprising multiple connected batteries, wherein each of the connected batteries comprises:

layered cell elements including a cathode and an anode that are facing each other;
and

an electrolyte layer between the cathode and the anode,
wherein lithium ions can be inserted into and removed from the cathode and the anode through the electrolyte layer,

wherein the electrolyte layer consists essentially of individual insulating particles individually applied directly to at least one of the cathode and the anode and affixed thereto, and electrolytes occupying at least some of a plurality of interstitial spaces between the individual insulating particles.

16. (Previously presented) A vehicle having a battery assembly comprising multiple connected batteries mounted as a power supply for a drive train of the vehicle, wherein each of the connected batteries comprises:

layered cell elements including a cathode and an anode that are facing each other;
and an electrolyte layer between the cathode and the anode,

wherein lithium ions can be inserted into and removed from the cathode and the anode through the electrolyte layer, and

wherein the electrolyte layer consists essentially of individual insulating particles individually affixed directly to at least one of the cathode and the anode and electrolytes

positioned such that the electrolytes occupy at least some of a plurality of interstitial spaces between the affixed individual insulating particles.

17. (Canceled).

18. (Canceled).

19. (Canceled).

20. (Previously presented) The battery according to claim 1, wherein the arrangement of individual insulating particles is a patterned arrangement.

21. (Previously presented) The battery according to claim 20, wherein the patterned arrangement is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

22. (Previously presented) The method according to claim 10, wherein the individual insulating particles and an electrolytic polymer are applied in a pattern.

23. (Previously presented) The method according to claim 22, wherein the pattern is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

24. (Previously presented) The battery assembly according to claim 15, wherein the electrolyte layer comprises individual insulating particles and electrolytes arranged in a pattern.

25. (Previously presented) The battery assembly according to claim 24, wherein the pattern is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

26. (Previously presented) The vehicle according to claim 16, wherein the electrolyte layer comprises individual insulating particles and electrolytes arranged in a pattern.

27. (Previously presented) The vehicle according to claim 26, wherein the pattern is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

28. (Canceled).

29. (Canceled).